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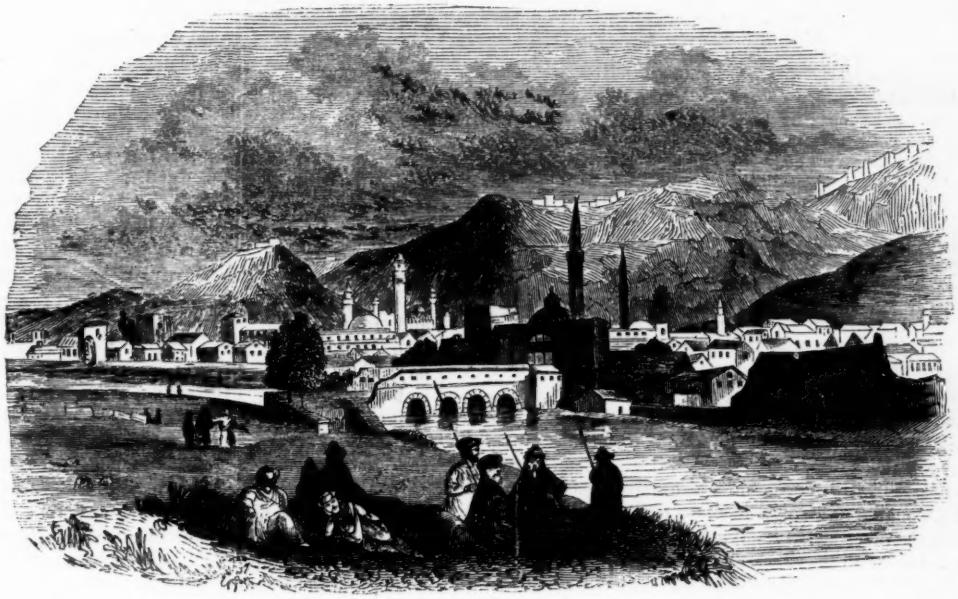
TURKEY AND THE TURKISH PROVINCES.



ANTIOCH.

ANTIOCH AND ITS VICINITY.

In the present series of articles we do not profess to adopt a strictly geographical arrangement of our subject, but to give *Sketches*, each of which will, to a certain degree, be complete in itself, while the whole collectively will illustrate the landscapes, the commerce, the buildings, the religion, the manners and customs, &c., of that widely-spread and highly-diversified empire over which the Grand Seigneur reigns. In the last two papers we selected Moldavia and Wallachia as the subjects of our notice. In the next two or three we shall visit some of the Asiatic towns of the empire, such as Antioch, Mecca, and Medina.

After having passed through Asia Minor, that remarkable peninsula which separates the Mediterranean from the Black Sea, we arrive at Syria, the eastern boundary of the Mediterranean. The manner in which this country is now governed was partly explained in the series of articles on the Syrian Coast, in our last volume, and we therefore shall here content ourselves with observing that Antioch is in the northern part of this region, within the pachalic of Aleppo or Haleb. This once splendid city, known as Antiocheia to the ancients, was the capital of the Syro-Macedonian empire, and being situated about midway between the cities of Constantinople and Alexandria, has since then been the centre of an extensive caravan trade. Its position, too, on the beautiful river Orontes, has placed it in favourable proximity to the Mediterranean.

With the exception of Jerusalem there is not perhaps another city of which the records present so sad a catalogue of revolutions and direful calamities as Antioch. Besides the usual plagues of Eastern cities, pestilence, famine, fire, and sword, it has been peculiarly subject to the most dreadful earthquakes. The city was founded by Seleucus Nicanor, 300 years before Christ, and was held under much tyranny and civil contest by the family of the Seleucidæ, until near the time of Pompey's conquest, and the reduction of the city and country beneath the Roman yoke, B. C. 65. It was in the reign of Trajan, in the year of our Lord 115, that we first find mention of those terrible earthquakes with which Antioch more than any other city has been visited. It is said that on that occasion Trajan, being at Antioch, narrowly escaped with his life, and the city was almost entirely destroyed; but the munificence of the emperor was employed to repair the misfortune, as far as it lay in his power, and the city soon resumed its ancient splendour and commercial aspect. It would be wearisome to our readers to go through the long list of disasters which befel this city,—sometimes a prey to famine and the plague; frequently overturned by earthquakes; now plundered by the Persians; then retaken by the Romans; at one time devastated by fire; at another time pillaged by the Turks; afterwards captured under circumstances of treachery, cruelty, and fanaticism by the Crusaders; and then soon after taken away from them, with great slaughter of the inhabitants, by the Sultan of Egypt, and thus remaining in a deserted and ruinous condition, till, with the rest of Syria, it passed into the hands of the Ottoman Turks, to whose empire it has ever since appertained.

We have the testimony of many travellers to the fertility of soil and richness of landscape which mark the vicinity of Antioch, even in its present neglected and degraded state, and we can therefore the better imagine what were its sources of wealth and delight in former days, when emperors were attracted by its pleasures, and Roman veterans were allured from their duties by the luxuries of this splendid city. The fo-

lowing is the description of the scenery on the banks of the Orontes, as given by Captains Irby and Mangles.

We now began to follow the banks of the river, and were astonished by the beauty of the scenery, far surpassing anything we expected to see in Syria, and, indeed, anything we had witnessed, even in Switzerland, though we walked nine hundred miles in that country, and saw most of its beauty. The river, from the time we began to trace its banks, ran continually between two high hills, winding and turning incessantly: at times the road led along precipices in the rocks, looking down perpendicularly on the river. The luxuriant variety of foliage was prodigious, and the rich green myrtle, which was very plentiful, contrasted with the colour of the road, the soil of which was a dark red gravel, made us imagine we were riding through pleasure-grounds. The laurel, laurustinus, bay-tree, fig-tree, wild vine, plane tree, English sycamore, arbutus, both common and andrachne, dwarf oak, &c., were scattered in all directions. At times the road was overhung with rocks, covered with ivy; the mouths of caverns also presented themselves, and gave a wildness to the scene; and the perpendicular cliffs jutted into the river, upwards of three hundred feet high, forming corners round which the waters ran in a most romantic manner. We descended at times into plains cultivated with mulberry plantations and vines, and prettily studded with picturesque cottages. The occasional shallows of the river, keeping up a perpetual roaring, completed the beauty of the scene, which lasted about two hours, when we entered the plain of Suadeah (Seleucia,) where the river becomes of a greater breadth, and runs in as straight a line as a canal."

Under the Macedonian kings of Syria the worship of the goddess Daphne was conducted in a grove near Antioch, which had been planted by Seleucus, the founder of the city. This beautiful grove of laurels and cypresses, with its temple and oracle, was long the most fashionable and splendid place of resort for Pagan worship in the East. The conduct of the people of Antioch seems to have closely corresponded with the instructions they received from the debasing rites of Pagan worship, for they are described to us as luxurious in life and licentious in manners. In such a soil as this we should scarcely have hoped to find Christianity taking root; but, nevertheless, we find on the arrival from Cyprus and Cyrene of certain converts who had fled from persecution to take refuge in Antioch, great numbers of the people of that city listened to the tidings they brought, believed the Gospel message, and embraced the religion of Christ. The name of *Christian*, first bestowed on the disciples in that city, was not applied to them in honour of their Lord, or simply to mark the distinction between them and others who adhered to paganism, but it was applied to them as a term of contempt and of the bitterest reproach; yet, notwithstanding the opprobrium attached to that name, many were found willing to bear it, and to separate themselves from the vices and profligacies of their city, that they might tread in the steps of their self-denying Lord. To this they were encouraged by the examples of Paul and Barnabas, who laboured during a whole year, by preaching and exhortations, to establish the new converts in the knowledge and belief of the truth. Thus was formed out of a luxurious and idolatrous people a community of true believers, at first comparatively few in number, but after a while increasing to a great extent, and becoming an illustrious and influential body, eminent for charity of spirit and consistency of conduct. It would detain us too long, to speak of the prosperity and increase of this church in the time of Chrysostom, at the latter part of the fourth century after Christ. It was a *worldly* prosperity, that was too great for the *spiritual* welfare of the Christians, and which appears to have prepared the way for succeeding apostasy.

We must now proceed to describe the remaining traces of former greatness, which were visible in this place, before the earthquake of 1822 laid it entirely in ruins. At that period a large part of the immense walls which formed the boundary of the ancient city were still standing. They were from thirty to fifty feet high, fifteen feet thick, and flanked by numerous square towers, and though much ruined, they distinctly marked the ancient boundary. There are different accounts as to the space inclosed by them. Mr. Buckingham says that they have a circuit of nearly four miles, but his statement is far below that of the more ancient authorities. The buildings at Antioch, at the period alluded to, were of a mean description, and no traces remained of architecture worthy of the "Queen of the East," as this city was once proudly named. The language spoken there was chiefly Turkish, though there were a few Christian families remaining, and some Jews. The Christians were accustomed to assemble for prayer in one of the caves or excavations in the rock, which are numerous in Antioch, and which appear to have been the ancient Necropolis*, or cemetery.

Great numbers of medals and engraved stones have been found in the neighbourhood of Antioch, especially during the winter season, when the ground has been laid bare by heavy rains. The most interesting are those of the Seleucidæ, the founders and beautifiers of the ancient city: there are also many of the period of Julius Cæsar and Augustus, with great quantities of Phœnician coins.

The modern name of Antioch is *Antakia:* it is very little known to the western nations: the attacks of its ancient *subterranean* enemy have reduced it almost entirely to ruins, and everything connected with that once proud and stately city must now be reckoned with the past.

* This word, translated *literally*, means "the city of the dead."

IN TIMES OF DISTRESS AND DANGER.

Oh God, that madest earth and sky, the darkness and the day,
Give ear to this Thy family, and help us when we pray!
For wide the waves of bitterness around our vessel roar,
And heavy grows the pilot's heart to view the rocky shore!
The cross our Master bore for us, for Him we fain would bear,
But mortal strength to weakness turns, and courage to despair!
Then mercy on our failings, Lord! our sinking faith renew!
And when Thy sorrows visit us, oh! send Thy patience too.—

BISHOP HEBER.

On the whole, we make too much of faults; the details of the business hide the real centre of it. Faults? The greatest of faults, I should say, is to be conscious of none. Readers of the Bible, above all, one would think, might know better. Who is called there the man according to God's own heart? David, the Hebrew King, had fallen into sins enough; blackest crimes; there was no want of sins. And, thereupon, the unbelievers sneer and ask, Is this your man according to God's heart? The sneer, I must say, seems to me but a shallow one. What are faults, what are the outward details of a life, if the inner secret of it, the remorse, temptation, true, often baffled, never-ended struggle of it, be forgotten? 'It is not in man that walketh to direct his steps.' Of all acts is not, for a man, *repentance* the most divine? The deadliest sin, I say, were that same supercilious consciousness of no sin;—that is, death; the heart, so conscious, is divorced from sincerity, humility, and fact; is dead: it is 'pure' as dead dry sand is pure. David's life and history, as written for us in those Psalms of his, I consider to be the truest emblem ever given of a man's moral progress and warfare here below. All earnest souls will ever discern in it the faithful struggle of an earnest human soul towards what is good and best. Struggle often baffled, sore baffled, down as into entire wreck; yet a struggle never ended; ever, with tears, repentance, true unconquerable purpose, begun anew. Poor human nature! Is not a man's walking, in truth, always that: 'a succession of falls?' Man can do no other. In this wild element of a life, he has to struggle onwards; now fallen, deep abased; and ever, with tears, repentance, with bleeding heart, he has to rise again, struggle again still onwards. That his struggle *be* a faithful, unconquerable one: that is the question of questions. We will put up with many sad details, if the soul of it were true.—CARLYLE.

ON CHESS. No. XVIII.

On the Powers of the Pieces and Pawns.

We have hitherto supposed the reader to be acquainted with, at least, the alphabet of chess; and have not hesitated to employ many of the technical terms used in the game. In the concluding articles of this course we hope to furnish some curious and useful information on subjects which are scarcely noticed in books devoted to the elements of chess-play.

We quite agree with the suggestion of a recent writer that the best method of learning the names of the pieces with their moves, and the manner of placing them at the beginning of the game, is to take an hour's lesson from a friend. Supposing this to have been done, and the student to be engaged in actual play, he will soon perceive that the various pieces have different degrees of power; that a rook is of more value than a bishop or a knight, and that a pawn is of far less value than a minor piece. He will find the queen to be a match for several pieces, and may be willing to part with a rook, a bishop, and a knight, in order to capture his antagonist's queen. The different values of the pieces and pawns are soon appreciated by the player, and he endeavours to regulate his exchanges accordingly; nevertheless, few persons have attended to the circumstances which decide these values, and although they are numerically expressed in most elementary works yet the computations which have led to them are always omitted.

If a general had two bodies of troops similar in most respects, but one of which, from any cause whatever, could occupy only a particular part of any hostile district; while the other was capable of occupying different posts at distant points by a series of rapid movements; the first body would, generally speaking, be far less valuable than the second. Now something analogous to this occurs at chess: those pieces which are capable of taking the greatest range over the board, and of making the most rapid movements, are the most valuable. For the hills and valleys of a contested country, we have nothing but black and white squares on the chess-board: therefore the test of strength which we are now considering is this,—how many squares of the chess-board can each piece or pawn command at one time?

In the first place, let us suppose the board to be cleared of its pieces and pawns, and one of each to be placed on it in succession. Choose a central square, such as the king's 4th, and ascertain how many squares a pawn or a piece can command from that position. A pawn placed on that square commands two others, being those to which it would move if it made a capture. The knight could move to any of 8 squares; the bishop to any one of 13 squares: the rook to 14: the queen to 27; and the king to 8.—We refrain from demonstrating these numbers, because the reader can easily satisfy himself on this point, by placing the pieces, one after another, on the king's 4th square, all the other squares being unoccupied. So far, then, as this mode of comparison is concerned, the power of the pieces to move on to other squares is

Pawn ... = 2
Knight... = 8
Bishop ... = 13
Rook ... = 14
Queen ... = 27
King ... = 8

But we have now to inquire whether this proportion exists for all the squares equally. A very little experience will show that it does not: every piece is diminished in value as it approaches the edges of the board; but this diminution is not the same for all. Let us select the king's rook's square, and notice the change in the powers of the pieces. Testing them one by one, we shall find that the number of squares to which each can move is—

Pawn ... = 1
Knight... = 2
Bishop ... = 7
Rook ... = 14
Queen ... = 21
King ... = 3

Here it will be seen, that while the rook has not changed in value, the others have done so considerably, but in different ratios. If we select any other square intermediate between the centre and the corner, we shall find the numbers to be higher than the one, and lower than the other of our two lists. The knight, for instance, commands 2, 3, 4, 6, or 8 squares, according to where he may be situated; the bishop commands 7, 9, 11, 13 squares; and so on. The correct way, therefore, of comparing the powers of the pieces in moving over the open board is to suppose a piece to be placed on every one of the sixty-four squares in succession—to add up the respective powers in all these positions,—and to divide the result by 64. This is a process analogous to that employed in every department of science for the obtaining of an *average* or *mean*, whereby small errors, variations, and discrepancies, become absorbed, or expunged by mutual correction in the general result; and it is perfectly applicable in the present case. This being done, it is found that the *average* power of each piece to move over the open board is nearly as follows:—

Pawn ... = $1\frac{1}{4}$
Knight... = $5\frac{1}{4}$
Bishop ... = $8\frac{3}{4}$
Rook ... = 14
Queen ... = $22\frac{3}{4}$
King ... = $6\frac{1}{2}$

Here the bishop is said to be $=8\frac{3}{4}$, which means that in consequence of his sometimes commanding as many as 13 squares, and at other times as few as 7, the average of the whole is $8\frac{3}{4}$; and so of the others —the rook being of constant value in any position on the open board.

We have now something like a test of the respective powers of the pieces, by which we begin to see the advantage of making exchanges of one for another. But still this is nothing more than a groundwork on which to found subsequent calculations, for we have proceeded on a supposition which never occurs in practice,—viz., an open or cleared board. The intermixture of pieces among each other over the field of contest, gives rise to variations so complicated and so remarkable that it has required great analytical research from distinguished men, to trace them to their sources. We strongly doubt whether this has yet been done correctly; but still an approximation to correctness has been made, and we will briefly notice the manner in which the inquiry has been conducted.

We have hitherto considered the board to be cleared, and have ascertained the relative values of the pieces on that supposition. Let us now suppose the pieces and pawns to be arranged for the commencement of a game, and view their positions before the game begins. Here we are struck with the remarkable fact that the pieces are almost powerless; it is true they act as defenders of the pawns which front them; but as to the power of moving, none of them posssess it except the knight. The king, the queen, the bishop and the rook cannot move a step until some of the pawns are moved, and the knight owes his power of moving to his singular privilege of leaping over other pieces or pawns. So far, then, as the power of moving is concerned, a pawn is actually more powerful than even a queen at the commencement of the game.

Now in actual play, the relative powers of moving are *always* intermediate between the two extremes which we have mentioned, from the time of the first move being made, the constrained limits of the pieces begin to be broken, and their natural powers to be developed; but

on the other hand, these powers never attain the rank given to them by our first supposition, for the two kings—even if nothing else—are always on the board. The power of moving from square to square varies as the game proceeds, but not with equal rapidity: for instance;—the knight is powerful from the very beginning of the game, because whatever be near him he can leap over the intervening piece; while the rook is seldom of much use till several of the pieces and pawns are off the board. The rook increases his value by the *thinning* of the combatants more rapidly than any other piece, and therefore the ratio of his value is continually increasing.

It thus appears that the degree of openness of the board changes the proportionate value of the pieces, and it is difficult to fix a point where the power may be deemed an average between the highest and lowest. It is assumed, however, that we may suppose each party to have lost three pieces and four pawns, leaving four pieces and four pawns to defend the king. This is a fraction more than half the original forces, and may therefore be taken as an average or medium between the powers possessed by the respective pieces when the board is quite open, and when all the pieces are arranged for the commencement of a game.

If during the progress of a game, when about half the pieces and pawns have been removed by mutual exchanges, one of the players estimate the various powers of his remaining pieces, he may sometimes observe that a whole rank, or file of squares is blocked up by the intervention of one single piece or pawn, and moreover, that the intervening piece or pawn may be of his own party. In such a case his own troops actually stand in each other's way; and the less skilful the player, the more likely is this self-imposed blockade to occur. It may, and sometimes does happen in practice, that every square to which the knight's peculiar leap allows him to move, is occupied by one of his own forces: and the queen, after making a capture, is frequently found to be so hemmed in by inferior pieces and pawns,—some of her own party, and others belonging to the antagonist, but well supported—that she becomes almost useless. If a piece be blocked up by one of the same party, the moving power in that direction is temporarily suspended, until the obstructing piece is removed; and if the obstructing piece be of the opposite party, but of inferior value, and *supported*, to capture that piece would be a loss, so that a passage in that direction may be deemed practically blocked out. From all this it will be seen, that the comparative values of the pieces, at and about the middle of the game, are greatly modified by the *liability of obstruction*, arising from the intervention of a piece belonging to the same party, or of a supported inferior piece of the opposite party.

Other variations in value will be noticed in our next article on this subject.

FRUITS OF SINGAPORE.—The boats are seen entering the harbour before sun-rise, laden with pine-apples and other fruits: the former, although not equal to those of the English hot-house, bear no comparison, from their superior flavour, with the same fruit of either East or West Indian growth. Here they are in such abundance that captains of ships frequently purchase them by boat-loads to scour their decks, which from the acidity they possess, they have the property of whitening. But here, and here only in its prime, is found the most delicious of all fruits, the mangostein, which, once tasted, is never forgotten; and often, on a sultry Eastern morning, the traveller recollects the baskets of these cool and luscious fruits that were here his morning meal.—*Six Months with the Chinese Expedition.*

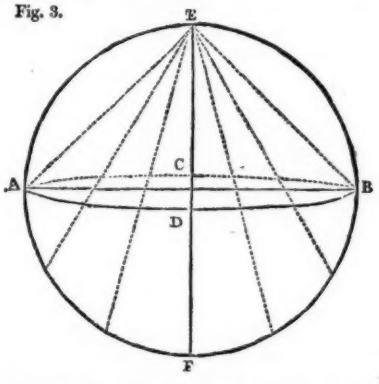
THE only difference between the camel and the dromedary is, that the latter is trained for riding, and the former for burdens. The distinction, at the most, is the same as between a riding-horse and a pack-horse; but, among the Bedawîn, so far as our experience went, it seemed to amount to little more, than that the one had a riding-saddle, and the other a pack-saddle.—ROBINSON'S *Palestine.*

MAPS AND MAPPING: III.

THE STEREOGRAPHIC AND THE GLOBULAR PROJECTIONS.—DEVELOPMENT—CONICAL—CYLINDRICAL.—MERCATOR'S PROJECTION.—CONCLUSION.

3. THE STEREOGRAPHIC Projection of the sphere is so named, because the *delineation* is supposed to be made by taking a view through the *solid* sphere. In this projection, the eye is considered to be placed at the surface of the sphere, as at E; hence, it views the concave of the opposite hemisphere A F B, through the plane of that circle A C B D, in the pole of which the eye is placed

Fig. 3.



This projection is therefore the reverse of the orthographic: in the latter the hemisphere was thrown down upon the plane of a great circle; but, in the stereographic method, the hemisphere (A F B) is brought up to this plane, (A C B D,) which is the plane of projection.

Although, as is evident from the foregoing figure, all the various places on the concave hemisphere A F B suffer considerable contraction in being represented on the plane of projection A C B D, yet the advantages offered by this method of projection have brought it more into use than the methods before mentioned. It is especially calculated for maps of the world, as usually made in two hemispheres, from the circumstance of the representation being so little distorted at the extremities; as may be seen, in the figure, by tracking up the several parts of the concave circumference A F B to the plane of projection above.

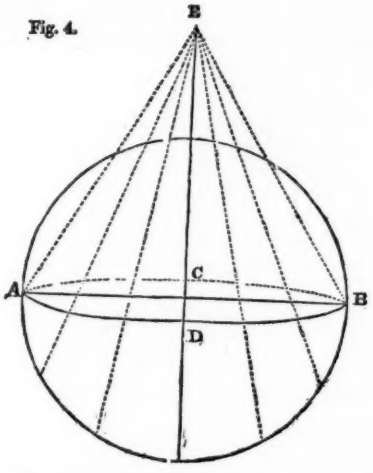
This projection is also preferable, on account of the meridians and parallels intersecting each other at right angles, as they do on the globe. Its construction also is less difficult than that of others; since all the great circles of the sphere are either circles or straight lines in the projection. The meridian of 20° W. is the one usually selected by English geographers for the plane of projection in these maps for the world, because this meridian passes very nearly between the eastern and western continents, which therefore occupy their respective hemispheres.

4. THE GLOBULAR projection is a modification of the last, and is so named, because, like the stereographic, it is chiefly used for making maps of the world.

We have already shown that the stereographic projection insures a general similarity in all its parts, and enables us to project at least a hemisphere in a single map, without any violent distortion of the configurations on the surface from their real forms. But as in the orthographic projection the borders of the hemisphere are unduly crowded together, in the stereographic their projected dimensions are, on the contrary, somewhat enlarged in receding from the centre. This will be visible by inspecting the previous figure.

To meet this inconvenience, and to give a general equability to the perspective, the globular projection was originated by M. de la Hire, on the following principle:—He supposes the eye to be placed at a distance

Fig. 4.



from the sphere equal to the sine of 45°; that is, if the diameter of the sphere be equal to two hundred, the distance of the eye from the nearest point of the circumference would be 70$\frac{7}{10}$. Some further modification was subsequently deemed desirable, in order that the meridians might intersect the equator at equal distances. This condition is very nearly fulfilled when the distance of the eye is 59$\frac{1}{2}$, the diameter being 200, as before.

In this projection, therefore, the arcs of the sphere, and their projections, are very nearly proportionate to each other; or, in other words, equal spaces on the spheric surface are represented by equal spaces on the map, by an approximation as near the truth as can be.

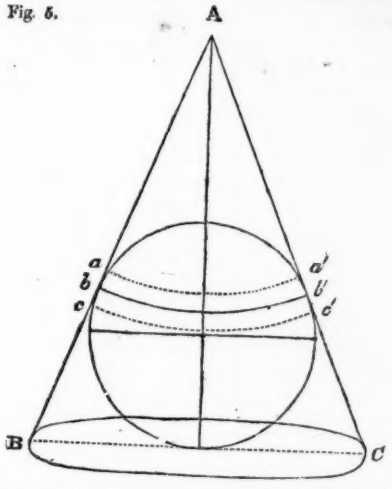
When the eye is placed at the surface of the sphere, as at E, (fig. 3,) all the meridians and parallels are represented on the plane of projection, as they really are on the surface of the globe itself; they are all circular: but, when the eye is placed out of the surface, as at E, (fig. 4,) the meridians and parallels lose the form of circles, and become ellipses, in proportion to the distance of the eye from the surface of the sphere. The meridians and parallels in the globular projection are, therefore, in reality, ellipses. They are not, however, usually drawn so; geographers contenting themselves with circular, in place of elliptical curves; and, as the deviation is excessively small in this projection, the practical utility of the map is not affected.

II. Projection, when referred to the principle of DEVELOPMENT, is understood to be the unfolding, or spreading out, of the spherical surface on a plane. This, however, first supposes the sphere to be converted into a cone or a cylinder;—these being the forms, portions of which most resemble portions of a sphere, and which, at the same time, are susceptible of the required development.

The methods of projection before explained, are usually employed in the representation of a hemisphere; but are seldom used in delineating the geographical features of a single country: for these the method of *development* is commonly employed, which is of two sorts,—the Conical and the Cylindrical.

1. It is a known property of a *cone*, that its curve surface can be expanded into a plane; hence, any figure delineated on it, can always be exhibited exactly in all its dimensions on a plane surface. Now, a part of the surface of a sphere contained between two parallels of latitude, not very remote, will not differ much from the surface of a frustrum of a cone, that touches the sphere in the parallel midway between them. Hence, it will be seen that, in the conical projection, the sphere is supposed to be circumscribed by a cone A B C, which touches the sphere at the circle intended to represent the middle parallel of the map,—*b b'*. If the points on the sphere be now projected on the cone by lines drawn from the

Fig. 5.



centre, it is evident that, in a zone extending but a short distance on each side of the middle parallel, as the zone included between *a a'* and *c c'*, the points on the cone will very nearly coincide in position with the corresponding ones on the sphere. All the delineations having been thus made, the cone is then conceived to be unrolled, or *developed*, on a plane surface.

If the map be made to extend much above or below the middle parallel, the distant parts will be very much distorted. To remedy the defects of this projection, various modifications have been suggested and used; but into these our limits will not allow us to enter.

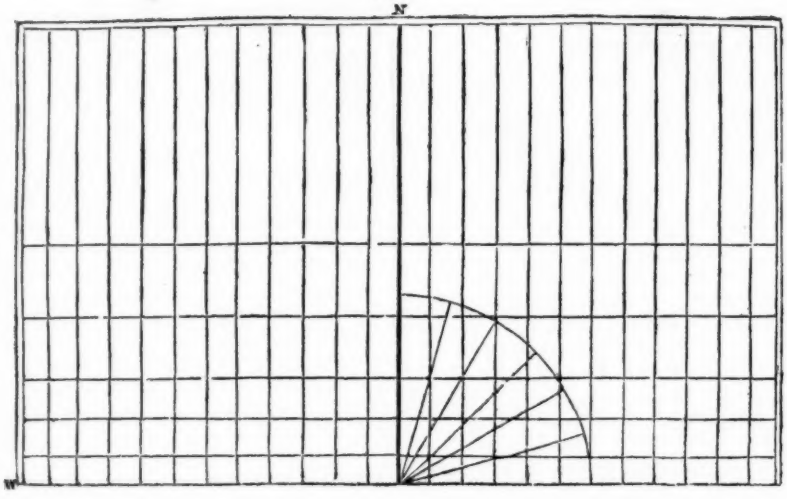
We cannot help observing, therefore, that the conic method of development is best adapted to represent countries to any extent in the difference of longitude, or round the whole circumference of the earth, if required to only a certain extent in difference of latitude. This projection is simple and easy of construction, owing to the facility of describing the parallels of latitude in concentric circles, and the meridians in straight lines.

At the first view of the case it might be difficult to conceive that the surface of the globe could be represented by a part of the surface of a cone; yet we may easily produce the surface of a cone from a piece of paper cut into a circular form or base; and we could as easily conclude that, if a cone, about twice the height of the semi-diameter of the globe, were to be conceived as standing on the same base with the hemisphere, namely on the equator, the surface of such a cone would in part lie within the surface of the globe, and then that the surface of the globe, at so small a distance from the surface of the cone, might be very easily projected or delineated on it; and in such a case, the projection of the countries and their bearings, distances, &c., will be very nearly the same on the surface of the included part of the cone, as on that of the globe itself.

2. From what has been said of the cone, it will be easily seen that a *cylinder* may be applied to the sphere in a similar manner, and that a zone of very limited extent in latitude may, without very material error, be developed on a cylinder. The peculiarity of this method is, that the meridians, as well as the latitude-circles, are projected in parallel straight lines; which circumstance makes it very applicable to nautical purposes, and from which originates the ingenious method, called *Mercator's projection*, which is now so universally adopted in our charts, and to which, in the last place, we must briefly allude.

The line on which a ship sails, when directing her course obliquely to the meridian, is on the globe a spiral; since it cuts all the meridians through which it passes, at equal angles. Owing to this and other causes, a map constructed on the principles of the spherical projections,

Fig. 6.



was found to be very inadequate to the wants of the navigator. Mercator justly considered, that mariners do not employ maps to know the true figures of countries, so much as to determine the course they shall steer, and the bearing and distance of those points or places which lie near their track; and this projection is the result of his efforts to secure to the seaman these desirable ends. The merit of this work is thought by many to be more justly due to Wright; for, although Mercator published his first chart in 1556, he omitted to explain the principles of it; and his degrees of latitude did not preserve a just proportion in their increase towards the poles. Wright, in 1599, corrected these errors, and explained the principles of his improved construction, in which the degrees of latitude on the chart were made to increase towards the poles, in the same ratio as the degrees of longitude decrease on the globe; by which means, the course which a ship steers by the compass, becomes on the chart a straight line; yet, the various regions of the map, however distorted, preserve their true relative bearing, and the distances between them can be accurately measured.

The modes of projection which we treated of, before entering upon those of Development, may be considered natural ones; inasmuch as they are really perspective representations of the surface of half the globe on a plane. Mercator's is entirely an artificial one, representing the sphere as it cannot be seen from any one point, but as it might be seen by an eye carried successively over every part of it. In it, the degrees of latitude and longitude bear always to each other their just proportion; the equator is conceived to be extended out into a straight line, and the meridians are straight lines at right angles to it, as in the figure. Altogether, therefore, the general character of maps on this projection is not very dissimilar to what would be produced by referring every point in the globe to a circumscribing cylinder, by lines drawn from the centre, and then unrolling the cylinder into a plane. Like the stereographic projection, it gives a true representation, as to form, of all the parts, but it varies greatly in scale, in its different regions; the polar portions in particular being of necessity extravagantly enlarged, as the upper part of the figure shows: and the whole map, even of a single hemisphere,—that is, from pole to pole. or 180°,—not being comprisable within any finite limits.

Mercator's chart may be produced by development in the following manner;—Conceive that a sphere, with the meridians and parallels and countries delineated on it, is inclosed in a hollow cylinder, and that the axis of the sphere coincides with that of the cylinder. Imagine now that the sphere is expanded in its dimensions, just as a soap-bubble is produced by blowing air into it, or as a bladder would swell in all directions by inflation, the parts always stretching uniformly;—the meridians will then lengthen in the same proportion as the parallels, till every point of the expanding spherical surface comes into contact with the concave surface of the cylinder: the meridians will at last become straight lines, and the parallels circles on that surface; the former in the direction of its length, and the latter parallel to its base, which is the equator, W. E. Suppose now the cylinder to be cut open along one of the meridians, and spread into a plane, the surface thus produced will be Mercator's chart.

In works on navigation are to be found tables of "Meridional parts," by means of which the meridians of these maps may be duly divided for drawing the parallels of latitude and the positions of places accurately laid down.

Thus we have endeavoured to lay before our readers the fundamental principles on which the art of map-making has for several centuries been built up. If he should be pleased with the subject, he may now advantageously have recourse to such treatises of this sort as show up, in all its details, the entire process of constructing maps and charts of all kinds.

IN the infancy of a science there is no speculation so absurd as not to merit examination. The most remote and fanciful explanations of facts have often been found the true ones; and opinions, which have in one century been objects of ridicule, have, in the next, been admitted among the elements of our knowledge. The physical world teems with wonders, and the various forms of matter exhibit to us properties and relations far more extraordinary than the wildest fancy could have conceived. Human reason stands appalled before this magnificent display of creative power, and they who have drunk deepest of its wisdom will be the least disposed to limit the excursions of physical speculation.

The influence of the imagination as an instrument of research, has, we think, been much overlooked by those who have ventured to give laws to philosophy. This faculty is of the greatest value in physical inquiries: if we use it as a guide, and confide in its indications, it will infallibly deceive us; but, if we employ it as an auxiliary, it will afford us the most invaluable aid. Its operation is like that of the light troops which are sent out to ascertain the strength and position of an enemy. When the struggle commences, their services terminate; and it is by the solid phalanx of the judgment that the battle must be fought and won.—SIR DAVID BREWSTER.

RURAL SPORTS FOR THE MONTHS.

SEPTEMBER.

Nor on the surges of the boundless air,
Though borne triumphant, are they safe; the gun,
Glanced just, and sudden, from the fowler's eye,
O'ertakes their sounding pinions: and again
Immediate brings them from the towering wing,
Dead to the ground: or drives them wide dispersed,
Wounded and wheeling various, down the wind.
These are not subjects for the peaceful Muse,
Nor will she stain with such her spotless song;
Then most delighted when she social sees
The whole mixed animal-creation round
Alive and happy. THOMSON.

On the first day of the present month, the shooting of Partridges becomes lawful, and is joyfully entered on by a vast number of persons throughout the country. It generally forms the young shooter's first lesson at game, and in order to be successful he carefully notes the habits of the bird at different seasons, and under different sorts of weather, &c.

In the zeal for destruction which seems to pervade all ranks and classes of society at this particular period, it may seem out of place to speak of the usefulness of the animals which form the especial object of pursuit, or to offer a recommendation in their behalf, that the war against the species may be regulated, and kept within due bounds, so that man may not reduce their numbers to his own injury. In the case of the partridge, as well as in that of many other birds, it is fully believed that if we understood their habits aright, we should often be disposed to cherish that which we are now zealous to destroy.

The common partridge seems in an especial manner to belong to an agricultural country. Wherever the soil is extensively cultivated, there it thrives and multiplies, and with all the persecutions to which it is subjected, we never find these birds driven to make their permanent abode in wild and solitary places. Their pertinacious adherence to the same turnip-field, or to the same clover-matted stubble, has aptly been comp red to that of a mountain-tribe of human beings clinging to their fastnesses in a war of extirpation.

Now it cannot be supposed by any reflecting mind that the habits with which these birds are endued, their attachment to a cultivated soil, and the rapid multipli cation of their species, are without their particular use and end in the economy of Nature. There must be a good design in it, and one in which the welfare of the human race is concerned. It has been well said that "that which invariably accompanies improvement, is, we may rely on it, necessary to improvement;" and it is not difficult to see that it is so in the present case. All birds that feed upon the ground live almost exclusively upon *insects*, under which general name we include many small living creatures, to whom the application of the term, in its strict sense, does not belong. And although the partridge also feeds on grain, seeds, bulbous plants, &c., and thus partakes of the produce of the cultivated field with man, yet the service it renders in consuming the overplus of insects may be set against this; and if it could be fairly estimated would, we doubt not, be found far more considerable than the injury sustained.

The time of the year, the weather, and many other circumstances influence the practice of the partridge-shooter. The usual way of proceeding in search of these birds in September is to try the stubbles first, and then the potato and turnip-field, where the birds frequently bask when such fields lie contiguous to the stubble. When the shooter *breaks* a covey, he proceeds without loss of time to search after the dispersed birds, for the parents begin to call almost immediately on their alighting, the young ones answer, and in less than half an hour, if not prevented by the presence of the shooter and his dogs, the whole of the covey will be re-assembled, probably in security in some snug corner, where the shooter least thinks of looking for them. Dispersed birds afford what is called the "best sport" to the shooter, for while under the protection of the old ones they are guided by the superior sagacity and watchfulness of their parents, but when deprived of them, they are truly discomfited, and do not know whither to run for safety: as the season advances, birds are longer in re-assembling. In this respect much also depends on the weather and the time of the day. The habits of partridges at the early part of the season, are somewhat as follows.—Just before sunrise they run to a brook, spring, or marsh, to drink; from which place they almost immediately fly to a field where they can find plenty of insects, or to the nearest corn or stubble field, when they will remain, according to the state of the weather, and other circumstances, until nine or ten o'clock, where they go to bask. The basking-place is frequently on a sandy bank-side, facing the sun whe the whole co vey remains huddled together for several hours. About four or five o'clock they return to the stubbles to feed, and about six or seven they go to their *jucking-place*, a place of rest for the night, where they remain closely packed together until the morning. Their times of feeding and basking vary according to the length of the days. While the corn is standing, partridges will often remain in it the whole day. The uncertainty as to where partridges may be found increases after the middle of October. At this time if much disturbed they will occasionally take shelter in the woods, where they may be flushed one by one.

The number of birds in a covey varies much, but is considered to average from ten to fifteen. The length of flight of a covey also differs according to the nature of the ground. In a fertile farm in a corn country, the sportsman has not any great distance to travel before he comes again upon his covey, sometimes the mere passing of a hedge will enable him to reach them, but in a very open country, where the birds have been used to a much more extensive range, a mile, or even more, has been traversed in following their flight.

The partridge of Britain (*Tetrao Perdix*, Linn.) is of two kinds, the common, or ash-coloured (*cinerea*) and the Guernsey or red-legged (*rufa*); but the latter is almost entirely confined to the Channel Islands.

The common partridge is so well known that it is almost unnecessary to describe it. The weight of a full-grown male bird in good condition is about fifteen or sixteen ounces, that of the female, about two ounces less; the length of the entire bird is about thirteen inches, the breadth twenty. The bill, and naked parts, are of a bluish-gray colour, with the exception of a red spot behind the eye. The general colour of the plumage is brown ash, elegantly mixed with black, and each feather is streaked down the middle with buff-colour. The feathers of the throat, cheeks, and over the eyes are reddish-orange. The legs of the male are furnished with a blunt spur, or knob behind, and the breast with a crescent of a deep chesnut colour. The feathers of the female are in general of a duller hue than those of the male, but it is only the experienced sportsman that can distinguish the difference of sex when the birds are on the wing. Those who are able to do this always aim at the male bird, as there is a greater number of male partridges, than of females.

The age of partridges is discovered by the bill and legs, which are yellowish when young, but become of a dark bluish-white as they increase in age. Another method is, by examining the appearance of the last feather of the wing, which is pointed after the first moult, but in the following year is quite round. The size, and plumage of the partridge, however, is much affected by local circumstances: the finest birds are found in those situations where cultivation has been the most successful, while in districts that are comparatively unproductive

and sterile, the appearance of the bird has occasionally led to the opinion of its being a distinct species, or at least a variety.

Partridges are the most prolific of the wild gallinidæ, the eggs being seldom fewer than twelve in number, while they are often as many as twenty, and have on several occasions greatly exceeded that number, as the following instances will show. In the year 1793 a partridge nest was found in a fallow field on the farm of Mr. Pratt, near Ferling, in Essex, with thirty-three eggs; twenty-three of the eggs were hatched, and the birds went off; the number of the eggs was ascertained before hatching to decide a bet laid by a person who refused to credit so unusual a production. In order to cover the whole of the eggs, the female had piled up seven in a curious manner in the centre. A nest was also found in 1798, at Elborough, Somersetshire, in a wheat-field, with twenty-eight eggs. Mr. Daniel tells us that upon the farm of Lion Hall, in Essex, belonging to Colonel Hawker, 1788, the following incident was known to many persons. A partridge, instead of forming her nest as usual, on the ground, chose the top of an oak pollard, and this tree, too, had one end of the bars of a stile fastened to it, so that the passengers along the footway, in getting over the stile, disturbed and uncovered the bird before she began to sit close. The farmer, whose name was Bell, apprised Mr. Daniel of the circumstance, which he laughed at as being the report of the work-people, and said it was only a wood pigeon they had mistaken for a partridge; but the former, who had killed some hundreds of partridges, so positively affirmed his having beheld the bird upon the nest on the tree, and also having told the eggs to the number of sixteen, that Mr. Daniel was persuaded to ride to the spot, where the partridge was seen sitting: in a few days she hatched sixteen eggs; and her brood, scrambling down the short and rough boughs which grew around the trunk of the tree, reached the ground in safety.

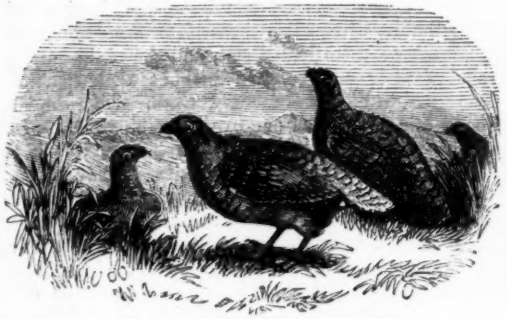
The nest usually made by the partridge is merely a hole scratched in dry mould, or a few bents and decayed leaves strewed roughly in the hollow made by an ox or horse's hoof. Sometimes it is formed on hedge-banks, sometimes in corn or grass, frequently in clover. It is often found beneath the shelter of some low bush or tuft of grass. The eggs are generally laid about the latter end of May; they are of a greenish-gray colour, and the female sits so remarkably close, that not only does she not rise when her nest is approached, but it is difficult to drive her from it. She is at this time very bold in driving off her winged foes; and magpies, cranes, and other plunderers of nests, are valiantly opposed in their depredations. The male partridge does not share the labour of incubation, but is attentive to his mate, and joins her in defending the brood, and uses many arts to decoy visitors away from the nest. Frequent and heavy rains during the time of laying and incubation are very unfavourable; many of the eggs are chilled or drowned, and if the weather is wet when the young first leave the shell the cold benumbs the little strength they have in their legs, and they soon fall and die, even while their mother is leading them forth in search of food.

The affection shown by the partridge for its young is peculiarly strong and lively. Both parents seem equally assiduous, after the birds are hatched, in leading them out, and directing them to their proper food, and in protecting them by every means in their power from their enemies. Insects, larvæ, and eggs, are the food of young partridges; ant-eggs, in particular, seem necessary to their existence. At this period the male and female frequently sit close together and cover the young with their wings, exhibiting such evident marks of parental tenderness, that few persons would willingly disturb or injure them in such a situation. When they are accidentally discovered, or alarmed by a dog, they act in a manner thus described by an eye-witness:—

The male first gives the signal of alarm by a peculiar distressful cry, throwing himself at the same moment more immediately in the way of danger, in order to mislead the enemy; he flies, or rather runs along the ground, hanging his wings and exhibiting every symptom of debility, whereby the dog is decoyed by a too eager expectation of an easy prey, to run further from the covey. The female flies off in a contrary direction, and to a greater distance, but soon after secretly returning she finds her scattered brood closely squatted among the grass, and collecting them with haste by her jucking she leads them from the danger before the dog has had time to return from the pursuit.

Partridges are easily tamed, but do not breed in confinement. An instance is given of one of these birds becoming so familiar in a clergyman's family where it was reared, that it would attend the parlour at breakfast and other times, and would afterwards stretch itself before the fire, seeming to enjoy the warmth as if it were its natural bask on a sunny bank. The dogs of the house never molested it, but at last it fell under the paws of a strange cat and was killed. The eggs of partridges are frequently collected, and hatched under domestic hens, the broods being afterwards turned into preserves for the purpose of stocking them. In this case, the food of the young birds should at first consist of the eggs of the small ant; afterwards they should be fed with fresh curds mixed with lettuce, chickweed, or groundsel. It will be some time before they can eat grain readily.

In Franklin's *Constantinople* we meet with an account of the method practised by the Arabs of Monnt Lebanon in taking the partridge, so that "to hunt the partridge upon the mountains" is still, as in Scripture times, a custom of that country. The Arabs make a slight square frame of wood, of about five feet in height, over which they stretch an ox-hide perforated in three or four places. The ox-hide is moved quietly in an upright position, and the Arab concealing himself behind it, is hidden from the view of the game, which unsuspectingly allow the sportsman to come within shot of them. The Arab, seeing through one of the apertures, quietly protrudes the muzzle of his long musket through another hole, and firing upon the birds, as they feed in coveys upon the ground, kills a great many of them.



PARTRIDGES.

In all these, (the articles of faith comprised in the creed,) the sky of my belief is serene, unclouded by doubt. Would to God that my faith, that faith which works on the whole man, confirming and conforming, were but in just proportion to my belief, to the full acquiescence of my intellect, and the deep consent of my conscience! The very difficulties argue the truth of the whole scheme and system for my understanding, since I see plainly that so must the truth appear, if it be the truth.—COLERIDGE.

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